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Application No. 10/758,966
Final Office Action Dated February 28, 2007
Amendment Dated May 29, 2007
Attorney Docket No. F125

Remarks/Arguments

Claims 1-12, 21, and 22 are in the application. Claim 1 is in independent form. As discussed below, Applicants are requesting that claims 21 and 22 be amended to incorporate the limitations of their canceled parent claims. If this amendment is allowed, claims 21 and 22 will also be in independent form.

Applicants request that claims 13-20 be canceled and that claims 21 and 22 be amended as shown above to incorporate the limitations of their canceled parent claims. No new matter is added by way of this amendment, and no new search will be required by the Examiner. Even though this amendment is requested after final action, the amendment is allowable under § 714.12(b)(1) of the MPEP because the amendment is made in order to cancel claims.

Applicants also wish to thank the Examiner for allowing the drawings as corrected in their Response dated December 7, 2006.

Double Patenting Rejections

Claims 1-3, 13-17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 23-25 of copending Application No. 10/664,247 (now U.S. Pat. No. 6,753,538). With this Response, Applicants hereby submit a Terminal Disclaimer, along with the authorization to charge a deposit account for the Terminal Disclaimer fee.

Claim Rejections under 35 USC § 102

Claims 1-3, 6-8, 10-12, 21 and 22 are rejected under 35 USC § 102(e) as anticipated by U.S. Patent Application Publication 2003/0047691 of Musil et al. (hereinafter "Musil"). Further,

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claims 1-12 and 21-22 are rejected under 35 USC § 102(e) as anticipated by U.S. Patent

Application Publication 2004/0151991 of Stewart et al. (hereinafter "Stewart").

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); See M.P.E.P. § 2131. Applicant submits that the reference cited by the Examiner does not set forth, either expressly or inherently, all of the elements of the rejected claims.

Claims 1-12

Applicants' claim 1 (along with dependent claims 2-12) claims "[a] method of restoring the transparency of a quartz material having implanted gallium that reduces the transmission of the quartz material, comprising: directing a gas towards a gallium implanted portion of the quartz material; and directing an electron beam towards the gallium implanted portion of the quartz material, the electron dose of the electron beam being such that the thickness of the quartz material is substantially unchanged, and the transmission of the quartz material is substantially increased." (emphasis added.)

The Musil reference simply does not teach all of the limitations found in this claim. According to the Examiner, "Musil teaches repairing opaque defects of a lithography mask by directing an electron beam and XeF₂ toward a region of a quartz substrate into which Ga⁺ ions have been implanted." First, as discussed below, this is not what Musil teaches. However, even assuming this is a correct characterization of Musil, this teaching is not sufficient to anticipate Applicants' claims 1-12.

Musil teaches the removal of opaque defects—composed, for example, of tungsten, tantalum nitride, or other molybdenum-silicon compounds—from a lithography mask. *See* Musil

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at [0054] and [0055]. One of the advantages of the methods taught by Musil is that they allow the repair of such opaque defects without implantation of gallium ions into the mask substrate. While the reference does discuss an optional step where some degree of gallium implantation could occur, *see* Musil at [0048], the reference does not teach any method whatsoever of repairing this gallium implantation should it occur.

Further, even if Musil did teach a method of restoring transparency for quartz material having implanted gallium, it still would not teach all of the limitations of Applicants' claims 1-12. Applicants' claim 1 (along with dependent claims 2-12) requires that the transmission of the quartz material be substantially increased while the thickness of the quartz material is substantially unchanged. In Musil, the electron beam is used to completely remove the material causing opaque defects. The reference clearly states that, even when the optional FIB milling step is used¹, the electron beam is still used to remove the implanted layer of approximately 20-40 nm of material. Musil at [0048]. In other words, Musil teaches increasing the transmission by removing the entire layer of implanted quartz material. This is hardly the same as leaving the thickness of the layer substantially unchanged. Not only does Musil fail to teach all the limitations of claim 1, Musil's teaching is directly contrary to Applicants' claim 1.

The same is true for Stewart. Nowhere does Stewart mention increasing the transmission of the quartz material without changing the thickness of the layer. Not only does Stewart directly incorporate Musil, Stewart also repeatedly refers to repairing any implantation defects by completely removing the gallium-implanted layer. *See, e.g.,* Stewart at [0036] and [0044].

Applicants respectfully suggest that the Examiner is using the wrong standard to evaluate anticipation under § 102. With all due respect, it appears that the Examiner has based his

¹ This is the only example in Musil that could result in a gallium-implanted quartz material layer.

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objection upon his interpretation of the "gist" or "thrust" of the application, rather than an examination of the actual claimed invention. *See Bausch & Lomb v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 447-49, 230 USPQ 416, 419-20 (Fed. Cir. 1986), *cert. denied*, 484 U.S. 823 (1987) (District court erred by focusing on "concept of forming ridgeless depressions having smooth rounded edges using a laser beam to vaporize the material" while disregarding express limitations in claims); *see also* MPEP § 2142.02(II). Because Musil and Stewart also teach methods of repairing transmission defects using an electron beam and etching gas, the Examiner has concluded that these references anticipate the present invention without considering the express limitations in Applicants' claims. This is simply not the standard for § 102 anticipation.

In fact, the Examiner expressly acknowledges that Musil does not explicitly teach the limitations of claims 6-8, 10-12, and 21-22 (Office Action of Feb. 28, 2007, at p. 5) but nevertheless still rejects these claims under § 102. According to the Examiner, because Musil obtains results that meet the result-limitations in the claims, it follows that "comparable" operation parameters were used in Musil. "Comparable" limitations, however, are not enough to show § 102 anticipation.

Instead, § 102 anticipation requires that each and every element as set forth in the rejected claim be present in the reference, either expressly or inherently. *Verdegaal Bros.*, 814 F.2d at 631, 2 USPQ2d at 1053; M.P.E.P. § 2131. Further, a claim limitation is inherent in the prior art only if it is necessarily present in the prior art, not merely probably or possibly present. *Rosco v. Mirror Lite*, 304 F.3d 1373, 1380, 64 USPQ2d 1676 (Fed. Cir. 2002) (*emphasis added*). In other words, the exact limitations in Applicants' claims must be expressly or necessarily present in the reference. For Applicants' claim 1-12, it is certainly not inherent in Musil that the transmission of the quartz material be substantially increased while the thickness of the quartz

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material is substantially unchanged. This limitation may be possibly present, but it is obviously not necessary since the Musil reference specifically mentions an example where the limitation is not present. In [0048], Musil describes an example where an implanted layer 20-40 nm thick is completely removed by the electron beam and etching gas. Removing the entire layer is obviously not the same as leaving the thickness substantially unchanged. The same would be true for Stewart, since Stewart specifically incorporates Musil by reference.

As a result, Applicants submit that the § 102 rejection of claims 1-12 is improper. It may well be that Musil and/or Stewart render Applicants' claims obvious under § 103. In fact, it does appear that the all of the Examiner's reasons for rejecting Applicants' claims would be much more appropriate for a § 103(a) rejection. However, because the subject matter of Musil, Stewart, and the claimed invention were, at the time the claimed invention was made, owned by FEI Company, the assignee of the present invention, neither reference can be used to render the present invention obvious under § 103(a).

Claims 21 & 22

Claims 21 and 22 both contain the limitation that the transparency of the substrate is restored by etching the substrate by less than 5 nm. This limitation is simply not found expressly in either Musil or Stewart. Also, the limitation cannot possibly be inherent in either reference since Musil and Stewart (by way of incorporating Musil by reference) both describe an example where transparency is restored by completely removing a layer of implanted quartz material 20-40 nm thick by using the electron beam and etching gas. Even if the limitation is *possibly* present, it is not necessarily present, and thus the § 102 anticipation is not proper.

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As with claim 1 above, it may well be that Musil and/or Stewart renders Applicants' claims 21 and 22 obvious under § 103. However, because the subject matter of Musil, Stewart, and the claimed invention were all, at the time the claimed invention was made, owned by FEI Company, the assignee of the present invention, neither Musil nor Stewart can be used to render the present invention obvious under § 103.

All Remaining Claims

Applicant submits that the remaining claims, being dependent from claims that are allowable for reasons stated above, are also allowable. Accordingly, Applicant requests that the objections to these remaining claims also be withdrawn.

Conclusion

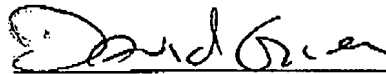
It is believed that all of the pending issues have been addressed. However, the absence of a reply to a specific objection, issue, or comment does not signify agreement with or concession of the rejection, issue, or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this reply should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this reply, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

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Applicant submits that all claims in the application are now in condition for allowance,
and Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



David Griner
Reg. No. 47,614
Attorney for Applicant
PO Box 164140
Austin, TX 78716-4140
Phone (512) 637-0800
Facsimile (512) 306-1963
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